Evaluation of MDA and SOD in Secondary Iron Overload Model

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Abstract

Iron is an essential element in the body which has a key role for many critical biological functions. But excess iron absorption in the body for many years has toxic effects and cause health problems. Depletion of antioxidant, lipid peroxidation, formation of free hydroxyl radicals and the peroxidation of membrane lipids are the major consequences of oxidative stress induced-iron overload. Malondialdehyde (MDA) is considered as a hallmark indicator of the degree of lipid peroxidation. Also, superoxide dismutase (SOD) as Antioxidant may play a role in the prevention of iron overload-induced harmful free radicals. In the present study we gathered data from in vivo model of iron overload on Sprague rat through in traperitoneal injections of iron-sucrose to investigate the effect of excess iron on lipid peroxidation status such as Malondialdehyde (MDA) and SOD activity as antioxidant. Sprague rats exposed to daily iron injection at a dose of 75 mg/kg body weight for two weeks (6times/week) **.** Tail-vein blood samples were collected in chilled EDTA-treated tubes for measurement of MDA (in 6th and 12th days of injection (. The amount of MDA was measured using the MDA assay kit according to the manufacturer's protocol. SOD level also, was determined by SOD assay kit as previously as described. Only rats exposed to daily iron injection at a dose of 75 mg/kg body weight for one week revealed a significant increase in lipid peroxidation in compared with their controls, whereas there was no significant difference in SOD level between control and iron-loaded animals. Secondary iron overload may result in excessive iron deposition in the liver, has a toxic effect and cause health problems. Our work is the first study that officially describes iron overload models carried out in young rats using iron-sucrose.

Keyword: Iron overload, Liver, Malondialdehyde (MDA) , Super oxide dismutase (SOD) , Sprague rat.

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